



**UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/970,066	11/10/97	DUAL	P 0-8200

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11/17/1117

EXAMINER

ANGELGANDY, M

ART UNIT PAPER NUMBER

1752

10

DATE MAILED:

11/17/98

**Please find below and/or attached an Office communication concerning this application or
proceeding.**

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/970,066

Applicant(s)

Dhal et al.

Examiner

Martin J. Angebrannt

Group Art Unit

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☒ Responsive to communication(s) filed on 9/14/98 and 10/5/98.

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-14 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-14 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 7

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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1 The response provided by the applicant has been read and given careful consideration.

The rejections based upon JP 05-094014 are withdrawn based upon the translation and the amendment to the claims, where the recording of the hologram using cationic polymerization is recited. The rejection under 35 U.S.C. 112, second paragraph is withdrawn based upon the amendment to the claim language. Responses to the arguments raised by the applicant are presented after the first rejection to which they are directed. Claims 15-27 have been canceled.

2 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3 Claims 1-4 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345 and Keys et al. '567.

Dhal et al. WO/97/1318 teaches the use of compositions including at least one monomer or oligomer capable of undergoing cationic photopolymerization. The use of any monomer capable of undergoing cationic polymerization is disclosed on pages 6 and 7. Useful photosensitizers and photoinitiators are disclosed on pages 5 and 7. Useful binders are disclosed on page 4.

Ohe et al. '345 teaches the use of cationically polymerizable materials which result in improved diffraction efficiency and superior environmental properties. Useful epoxides include those disclosed in columns 12-15.

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Keys et al. '567 teaches that when more crosslinking is desired, the use of multi functional monomers in amounts up to 5% is a means to achieves this.

It would have been obvious to one skilled in the art to add other, multi functional epoxy monomers/oligomers, such as those disclosed by Ohe et al. '345, to the composition of Dhal et al. WO/97/1318 and use them in forming a hologram based upon the direction to use more than one and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference, their previous use within the holographic art by Ohe et al. '345 and the direction to the addition of polyfunctional monomers when increased crosslinking is desired in the holographic art by Keys et al. '567.

The applicant argues that the combination of the references does not show the benefit discovered by the applicants, in that minimal shrinkage occurs when difunctional and polyfunctional monomers are used. The applicant agrees that using tri or higher functional monomers will rigidify the resulting polymeric structure and that this is well known in polymer technology. The applicant argues that this teaching has nothing to do with the benefits achieved by or problems solved by the applicants. The examiner disagrees, noting that increased crosslinking and the resultant increase in rigidity due to it would be expected to reduce shrinkage *as the more rigid structure would be more resistant to forces acting upon it*. This would be appreciated for polyfunctional monomers irrespective of the mechanism by which the crosslinking occurs. The increased rigidity and reduced shrinkage due to that rigidity would be expected with increased crosslinking for both cationic and free radical polymerization systems. Direction to use

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increased crosslinking within the art is shown by Keys et al. '567 and as similar enhancement processes are used, would be expected to achieve similar benefits. Additionally, increased refractive index modulation and resistance to abrasion and/or swelling (causing drift of replay wavelength) could reasonably be expected by one skilled in the art. The rejection is maintained.

4 Claims 1-4 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345, Keys et al. '567 and Sato et al. '846

Sato et al. '846 teaches useful cationic polymerizable compounds (3/5-4/4) The use of compounds having a siloxane group increases, refractive index modulation. This includes compounds embraced by formula (I).

In addition to the basis provided above, the examiner holds that it would have been obvious to use other siloxane compounds known to be useful cationically polymerizable materials, such as those disclosed by Sato et al. '846, in place of those specifically used in the examples of Dhal et al. WO/97/1318 as modified by Ohe et al. '345 and Keys et al. '567 with a reasonable expectation of achieving comparable results and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference.

No further response is presented as no further arguments are forwarded by the applicant.

5 Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhal et al. WO/97/1318, in view of Ohe et al. '345, Keys et al. '567 and Crivallo et al. J. Polymer Sci. and/or Eckberg et al. EP 0391162.

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Crivallo et al. J. Polymer Sci., Vol. 28A pp. 479-503 teaches the use of various epoxy silane compounds including those shown in tables I and II. Useful properties appear in pp 501-503

Eckberg et al. EP 0391162 teaches the use of cationically curable compounds embraced by the formula shown in the abstract and on page 5 with cationic photoinitiators.

In addition to the basis provided above, the examiner holds that it would have been obvious to use other siloxane compounds known to be useful cationically polymerizable materials, such as those disclosed by Crivallo et al. J. Polymer Sci. and/or Eckberg et al. EP 0391162, in place of those specifically used in the examples of Dhal et al. WO/97/1318 as modified by Ohe et al. '345 and Keys et al. '567 with a reasonable expectation of achieving comparable results and that any cationically polymerizable compound(s) would be useful in the composition within the Dhal et al. WO/97/1318 reference.

No further response is presented as no further arguments are forwarded by the applicant.

6 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dhal et al. '721 is equivalent to the Dhal et al. WO/97/1318 reference.

7 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

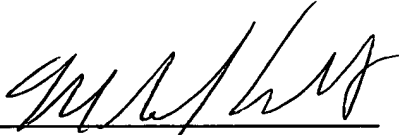
8 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebrannt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2303.

Facsimile correspondence should be directed to (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebrannt
Primary Examiner, Group 1750
November 13, 1998